

M e m o r a n d u m

Date: June 15, 2006

To: Assistant Commissioner, Staff

From: **DEPARTMENT OF CALIFORNIA HIGHWAY PATROL**
Academy

File No.: 91.11004.10904.4006 memo

Subject: WEAPONS EVALUATION AND RECOMMENDATION MEMORANDUM

On January 5, 2006, the Academy provided Assistant Commissioner, Staff with an unsigned copy of a memorandum on the evaluation and recommendations relative to the replacement of the Smith & Wesson 4006, current departmental duty weapon. The memorandum was provided to Commissioner Green unsigned by Assistant Chief James McLaughlin. The attached memorandum is a true and correct copy.

T. L. ABNEY
Captain

Attachment

Safety, Service, and Security

Memorandum

Date:

To: Assistant Commissioner, Staff

From: **DEPARTMENT OF CALIFORNIA HIGHWAY PATROL**
Departmental Training Division

File No.: 90.14670.A12706.91.S&W 4006TSW

Subject: SERVICE PISTOL EVALUATION AND RECOMMENDATIONS

The Academy Weapons Training Unit (WTU) was tasked with providing an evaluation of our current primary weapon system and to provide a recommendation of a replacement system should our current weapon system not meet current demands. Presently, the Department utilizes the Smith & Wesson (S&W) 4006.

The S&W 4006 was first introduced in 1990. The Department purchased 7,000 pistols in 1990, 1,500 pistols in 1994 plus 329 pistols absorbed from the State Police, 340 pistols in 2001, and 75 pistols in 2002 for a total of 9,244 pistols. Of these, 1,228 pistols have been purchased by retired employees, stolen, lost, destroyed, or traded back to Smith & Wesson. The Department currently owns 8,016 pistols with 856 designated as loaner pistols, training pistols, and issue stock.

The S&W4006 has a projected manufacture's service life of 20,000 rounds. Using a calculation of 50 rounds per month during a regular shoot and the number of rounds fired during Academy training, a pistol would have a projected useful life of approximately 30 years. However, a survey of area range officers indicates that officers are firing more than 50 rounds a month with the implementation of alternate courses of fire, skills building shoots, outside training (shooting schools, allied agency tactical training classes, etc.), and personal development.

The WTU found that many officers are shooting 100 rounds a month. With the implementation of the extra shoots, an officer can double or even triple the number of rounds being fired through his/her weapon each year, thus cutting the number of estimated service years of the weapon in half. The Department purchases five million rounds of pistol ammunition each year. The majority of these rounds are fired by field officers. The current number of sergeants and officers assigned to the field is 6,288. This equates to an average of 800 rounds fired per year for each sergeant or officer, which means that the service life of a brand new pistol will be reached in approximately 22 years. Given that 1,171 pistols have been issued at least two times and that in many Area officers are firing closer to 1,200 rounds per year, this indicates that many pistols have reached or will reach the end of their service life in the next three years.

Presently, the Department has 24 S&W 4006 pistols ready for issue and 145 pending inspection prior to re-issue. Many of the S&W 4006 pistols currently in stock have been through Academy training three or more times. The Department has not purchased new pistols for field issue since 2002. As such, cadets are issued used guns.

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Since Smith & Wesson no longer makes the S&W 4006, the Department will have to purchase a new pistol when the current supply of used pistols is exhausted. The Department currently has 169 pistols that can be re-issued. Given 68 pistols for the junior cadet class and 125 cadets for future classes, the Department will run out of pistols to issue to cadets for CTC-2-06, which arrives at the Academy on May 5, 2006. This number can change depending on the number of retiring officers requesting to purchase their pistol.

The Department currently has 7,160 S&W 4006 pistols issued to a uniformed employee and the following table shows how many pistols have been issued two or more times.

# of times issued	# of pistols	%
1	5,989	83.6
Two or more times	1,171	16.4

Recently, the WTU noted a number of recurring problems with our current weapon system due to the life expectancy of the weapon and the number of rounds being fired through a weapon. There is currently no system in place to record the number of rounds being fired through a weapon. During the transition to the S&W 4006 each officer fired 1,000 rounds during initial training, cadets fired 2,500 rounds during Academy training, and officers fired a minimum of 600 rounds each year. As discussed above, the average number of rounds fired by an officer in the field each year is substantially greater. Furthermore, all of the pistols currently issued to cadets will have had a minimum of 12,500 rounds fired through them by the time the cadets graduate.

The most common problems being experienced by the pistols can be traced to excessive wear, specifically; worn recoil springs, extractor problems, cracked barrels, cracked frames, and cracked slides. These aforementioned problems will only increase the longer a weapon remains in the field. The concern of the WTU is that as maintenance issues increase, the probability of a weapon malfunction, induced by decreased longevity, occurring during a deadly force encounter will also increase. Though the S&W 4006 will fire 20,000 plus rounds, as with any mechanical device, the longer it is in service, the more maintenance it will require and the more susceptible it becomes to malfunctions. There is no tracking system in place to monitor each weapon's maintenance issues and the amount of rounds that have been fired through it. It has been estimated based on the increase in weapon's failures during cadet training, complaints from the field, and repairs of field issued weapons by the Academy gunsmiths, that 50 percent, if not more, of the S&W 4006's issued to uniformed personnel have reached or exceeded the estimated life expectancy. Since 2001, for instance, the number of cracked barrels has steadily increased.

The following chart is a breakdown of the cracked barrels by year:

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Year	# of cracked barrels
2001	45
2002	49
2003	62
2004	86
2005 up to December 12th	125

Because Smith & Wesson no longer manufactures the S&W4006 it takes at least three months to repair pistols that have cracked barrels, cracked frames, or cracked slides. The Department currently has 31 pistols with cracked barrels, 12 pistols with cracked slides, and six pistols with cracked frames at the Smith & Wesson factory awaiting repairs. Some of the pistols with cracked barrels have been out of service since October and some of the pistols with cracked slides or frames have been out of service since May. This places an additional strain on our stock of pistols for issue to cadets as areas request additional loaner pistols. This extended time frame to make these types of repairs is due to Smith & Wesson having to stop production to make parts specifically for our pistols. In the case of a cracked barrel, Smith & Wesson has to make a S&W4006TSW barrel, modify it by hand for the S&W4006, and then custom fit it into a specific pistol. Additionally, it is no longer possible to obtain the adjustable rear sight for the S&W4006 and we now are forced to replace the adjustable rear sight with a S&W 4006TSW fixed rear sight.

In terms of replacement parts, Smith & Wesson recommends replacement of parts as necessary, rather than changing a particular part at a particular round count. The Academy gunsmiths have determined that the S&W 4006 has been very reliable and that the type and number of repairs are average for the age and normal wear and tear placed upon the pistols. The Department's experience with Smith and Wesson relative to service and repairs has been very favorable and their customer service has been excellent. This includes rapid turn around times for pistols sent back to the factory for repairs and supplying the Department with replacement parts when the S&W 4006 was still in production.

The S&W 4006 has proven itself as a reliable and effective weapon system that, if still produced, would provide the Department with dependable field service. The S&W 4006 has been replaced by the S&W 4006TSW, which features a number of advantages over the S&W 4006. The frame to slide fit is tighter, reducing the amount of vertical movement between the slide and frame during recoil. The delayed lock time keeps the barrel and slide together longer, slowing down the slide faster and reducing the impact of the barrel unlocking and the slide stopping against the frame. Both of these improvements reduce the stresses applied to the frame, extending the useful life of the pistol. The barrel unlocking system has also been changed resulting in better accuracy. The high maintenance adjustable rear sight has been replaced with a low maintenance fixed rear sight. The decocking/safety lever has also been replaced by a spring loaded decocking

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lever. This prevents a safety device from accidentally being engaged, which occurred to one of our field officers who was involved in a combat shooting and was unable to fire his weapon. The service life of the S&W 4006TSW is 30,000 rounds.

The recommendation of the WTU is for the Department to fully convert to the S&W 4006TSW over the next three years. This pistol is an updated version of the S&W 4006 and has already been tested and evaluated by the Department. The conversion would require minimal training and would provide our officers with an improved version of the current weapon system. The S&W 4006TSW would require a new holster; however, the magazines are the same. Converting to the S&W 4006TSW will eliminate having two different weapon systems in the field, providing our officers with the latest version of the pistol currently in use, and taking advantage of current advances in technology.

There are serious issues concerning both models being utilized in the field during any transition period. The biggest concern would be an officer who is trained on a S&W 4006TSW with a spring loaded decocking lever being issued a loaner model S&W 4006 that has a manually operated safety/decocking lever. The concern is that should an officer become involved in a combat shooting with a loaner weapon, the officer may not realize the safety/decocking lever is in the down position and that the weapon will not fire. Furthermore, the S&W 4006TSW does not fit in the model 4006 holsters. In addition to the loaner weapon, Area weapons officers would need to keep a supply of alternate holsters. This is also an officer safety concern, in that officers would have to be issued holsters they are not familiar with or been trained to use.

The WTU presently has 275 S&W 4006TSW pistols in stock. These pistols were manufactured at our request without a light rail. The WTU recommends that our current stock of S&W 4006TSW pistols be traded in for new pistols with the light rail. The S&W 4006TSW pistol is normally manufactured with the light rail and ordering pistols without a light rail will increase the production time and cost to the Department. The light rail does not effect the operation of the pistol and does not create any additional training issues. It is also very expensive to add a light rail post production to the pistol (\$200). This ensures pistol uniformity and eliminates having select units, such as the Special Weapons and Tactics Team (SWAT), having two pistols issued to one person. If an officer is authorized to have a light mounted on their pistol the only additional equipment required would be a special holster and the light. When the officer leaves the unit he/she would simply return the issued light and holster.

Due to the worn condition of the model 4006s that are in stock and limited supply, it will be necessary for the Department to start issuing the S&W 4006TSW for CTC-2-06, depending on how many retirees purchase their pistol. To date, no S&W 4006TSW pistols have been issued to the field; however, 25 S&W 4006TSW's have been issued to SWAT. The WTU has received very favorable comments from SWAT relative to the performance and accuracy of the S&W 4006TSW. Additionally, the departmental gunsmiths performed a full inspection of one of the SWAT S&W 4006TSW's. The weapon inspected had approximately 25,000 rounds fired through it. The gunsmiths found an increase in durability and a decrease in the wear of the

weapon as compared with the S&W 4006. The S&W 4006TSW has a life expectancy of 30,000 rounds which is 10,000 rounds more than the current S&W 4006.

In order for the WTU to test and evaluate a new firearm, it would require at least six months of evaluation and an unknown timeframe to train and equip the entire Department. The costs would include the new firearm, magazines, magazine pouches, holsters, statewide training (i.e., loading and clearing procedures, malfunction procedures, muscle memory training concerning trigger reset and grip, etc.), training ammunition, and statewide training of all weapons officers on the inspection procedures for the new firearm. Our current S&W 4006 pistols can be traded in for credit towards a S&W 4006TSW which will greatly reduce the cost. If the Department transitions to a new weapon other than the Smith & Wesson system, the cost of the transition for the firearm, magazines, training statewide, holsters, and magazine pouches would be much higher.

The number of S&W 4006TSW pistols that will need to be purchased to replace the pistols currently issued to the field and cadets is 7,160. There would be a need to purchase additional weapons for assignment as loaner weapons at the Area and Division level and an amount ready to issue stock from the Academy. The Department's cost of purchasing the S&W 4006TSW can be offset by S&W's offer to buy back the existing S&W 4006s at approximately \$171.00 per weapon. Smith and Wesson provided an approximate cost of \$675.00 for a new model S&W 4006TSW, minus the trade value of the 4006s. Also, the WTU recommends allowing officers to purchase the S&W 4006s that they are currently issued at the same cost as for a retired officer.

Estimated cost of replacement over three years of 7,160 existing S&W 4006s in addition to 856 weapons ready to issue stock for Area and Division loaner weapons is a total of 8,016 S&W4006TSWs:

New 4006 TSW (including six magazines per weapon)	\$675.00 each x 8,016 uniformed personnel, ready to issue stock, area and division loaner weapons = \$5,410,800
Approximate trade value of existing 4006s to Smith and Wesson	\$171.00 each x 8,016 = \$1,421,865 - \$1,370,736 subtotal: \$4,040,064
Approximate off set cost created by officers purchasing personal firearms (* numbers are based on the current approximate 45% of retired officers who purchase their duty weapon)	Purchase cost \$356.82 Minus trade in \$171.00 Offset \$185.82 x *150 = \$27,873 - \$ 27,873 subtotal: \$4,012,191

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Approximate cost to replace current departmentally issued holsters to accommodate the S&W 4006 TSW	<p>Current cost for right handed holsters: \$32.80 each + \$ 282,683</p> <p>Current cost for left handed holsters: \$69.51 each</p> <p>(Total estimated cost was based on an estimate that 10 percent of the uniformed personnel are left handed, 775 left-handed holsters and 6,976 right-handed holsters.)</p>
	Total estimated cost of weapon transition: \$4,294,874

The following timeframes outline the necessity of beginning the process of purchasing new S&W4006TSW pistols as soon as possible:

Purchasing S&W 4006TSW Pistols.

Two weeks – Requisition submission and approval.
Two months – Department of General Services approval and award.
Three to four months – Production and delivery of S&W 4006 pistols.
One month – Gunsmith inspection of new pistols.

Estimated date new pistols could be ready for issue if requisitioned January 2, 2006 – June 19, 2006.

Estimated date of CTC-2-06 pistol issue – August 2, 2006.

Depletion of Current Supply of S&W 4006 Pistols.

Current stock of S&W 4006 pistols ready for issue or awaiting inspection –	169
Estimated pistol turn-ins from retiring employees in 2006 -	<u>230</u>
Total estimated pistols available in 2006 -	399
Number of pistols needed for: CTC-4-05	68
CTC-1-06	125
CTC-2-06	125
CTC-3-06	125
CTC-4-06	<u>125</u>
Total number of pistols required for cadet classes through 2006	568
Estimated shortage of pistols for cadets in 2006 -	169*

*This number does not reflect the additional number of loaner pistols that may have to be sent out to the field due to pistols being out of service for an extended time due to a cracked barrel, cracked slide, or cracked frame.

The S&W 4006TSW offers the Department the best weapon system that can withstand the demands placed upon our firearms and that meets the needs of the Department. It is recommended that the transition to the model S&W 4006TSW be started as soon as possible to avoid having multiple weapons systems in the field and to accommodate the production time for Smith and Wesson to manufacture the required number of pistols.

The WTU recommends that the Department purchase 3,000 S&W 4006TSW pistols and holsters each year for the next three years. This will enable cadets to be issued new pistols, provide new pistols to be exchanged for S&W 4006 pistols out of service for an extended time (cracked barrels, slides, and frames), and provide for the transition to the S&W 4006TSW for two to three Divisions each year. At a minimum the Department needs to purchase at least 500 S&W 4006 TSW pistols each year for cadet classes and loaner weapons for areas with officers who have been issued a S&W 4006TSW.

Should you have any questions relative to this matter, please contact Sergeant Gilbert Lee, Academy Weapons Training Unit, at (916) 376-3239.

S. L. REDDING, Chief

RELEVANT FACTS

1. Percent of 4006 pistols issued two or more times – 16.4%.
2. There has been an increase in the number of 4006 pistol repairs.
3. Smith & Wesson no longer manufactures the 4006 pistol making it difficult or impossible to obtain certain parts (rear sights, barrels, slides, frames).
4. Estimated time frame for Smith & Wesson to replace cracked barrels, slides, and frames is three to five months.
5. The number of cracked barrels, frames, and slides has increased over the last five years. In 2001 there were 45 cracked barrels. In 2004 there were 86 cracked barrels. To date in 2005 there have been 125 cracked barrels.
6. Estimated time frame to order and issue new 4006TSW pistols is six to seven months.
7. Estimated time the Department will run out of pistols for cadet issue is August 2006.
8. The extended time (approximately three months) to repair cracked barrels, frames, and slides will necessitate the need for additional loaner pistols and further deplete the pistols available for cadet issue, accelerating the date the Department will exhaust the supply of pistols.
9. The cost of a 4006TSW pistol is \$675.00. Smith & Wesson has offered a \$171 trade in credit for 4006 pistols which gives an actual cost of \$504 for 4006TSW pistols.
10. The Department needs to purchase new pistols in January 2006 to avoid not having enough pistols for cadet issue.
11. Only purchasing enough 4006TSW pistols for cadet issue will leave the Department unprepared if large numbers of 4006 pistols develop cracked barrels, frames, and slides (refer to # 5). If the number of 4006 pistols out of service for three or more months exceeds the number of available pistols, the Department will not be able to provide pistols to officers and/or cadets until more 4006TSW pistols can be purchased (refer to # 6).

12. Purchasing enough 4006TSW pistols for the entire Department over a three to four year timeframe will spread the cost over multiple years and allow for a smooth transition to the 4006TSW with minimal disruption to Departmental operations.